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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,337	10/05/2004	Kuniaki Kawaguchi	1226-298	8358

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EXAMINER

TOSCANO, ALICIA

ART UNIT PAPER NUMBER

1712

DATE MAILED: 09/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/510,337

Applicant(s)

KAWAGUCHI ET AL.

Examiner

Alicia M. Toscano

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/05/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Priority

1. Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a translation of the foreign application should be submitted under 37 CFR 1.55 in reply to this action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kern (US 4181685) in view of Okawa (WO 0142326, US 6365704 is used as an equivalent English translation) and Sextro (US 3872182).

Kern discloses a thermoplastic molding composition based on polyoxymethylenes. Said composition comprises 99.999 to 90 wt% linear polyoxymethylene and 0.001 to 10 wt% of a branched or crosslinked polyoxymethylene. (abstract) Example 1 discloses the linear polyoxymethylene to be the reaction product

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of 98 wt% trioxane and 2 wt% ethylene oxide. These weight percentages meet the requirements of the wt% of (A), Claim 1. Kern does not disclose the melt index of said composition, however Sextro discloses the same composition (98 wt% trioxane and 2 wt% ethylene oxide) to have a melt index of 9 g/10 min (Table 1). Examiner thus finds the composition of Okawa to have a melt index of 9 g/10min, thus meeting all the limitations of component (A) of Claim 1.

Said linear polyoxymethylene is further blended with a branched polyoxymethylene. The branched or crosslinked polyoxymethylene is disclosed to be the reaction product of trioxane, a multifunctionally reactive compound and a monofunctionally reactive compound (Column 2 Lines 16-21). Example 1 further discloses the branched polyoxymethylene to be the product of 98 wt% trioxane, 1.8 wt% ethylene oxide, or monofunctional compound, and 0.2 wt% 1,4-butanediol-diglycidyl ether, or multifunctional compound. The weight percentages of the components meet the requirements of the wt% set forth in Claim 1 for compound (B).

Kern only discloses the use of multifunctional groups with 2 glycidyl groups, and does not disclose the use of glycidyl ether compounds with 3 to 4 functional groups, as required in component (B) of Claim 1. Okawa discloses polyacetal copolymers. Said copolymers are the reaction product of (a) trioxane, (b) either (b-1) a compound having at least 3 glycidyl groups, such as trimethylolpropane triglycidyl ether (Column 2 Line 60), or (b-2) a compound having at least 2 epoxy groups, such as 1,4-butanediol diglycidyl ether (Column 3 Line 15) and (c) a cyclic ether (abstract). Both resins, with either 2 or 3+ glycidyl group components, are disclosed to improve the rigidity of the

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resin while retaining properties such as appearance, slidability and thermal stability. It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Kern the use of a triglycidyl ether, such as trimethylolpropane triglycidyl ether, in the branched polyoxymethylene compound, as taught by Okawa, as these are taught to be functional equivalents in the art.

The melt index of the branched polymer of Kern is disclosed to be from 0.5 to 20 g/10min (Column 6 Line 17). It is the Examiners position that the replacement of diglycidyl compound with a triglycidyl compound would not greatly effect the melt index of the branched polymer, thus Kern and Okawa meet all the limitations of component (b) of Claim 1.

Further required is the melt index ratio. The melt index of the above composition is: 9 g/10min linear component (A) and 0.5 to 20 g/min branched component (B). The corresponding melt index ratio of B/A is 0.05 to 2.2 g/10min. Thus all the requirements of Claim 1 are met.

The melt index ratio discussed above meets the limitations of Claim 2. The use of trimethylol propane triglycidyl ether is discussed above and meets the limitations of Claim 3. The cyclic ether is disclosed to be ethylene oxide, as required by Claim 4.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Toscano whose telephone number is 571-272-2451. The examiner can normally be reached on Monday to Friday 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AMT


MARGARET G. MOORE
PRIMARY PATENT EXAMINER
ART UNIT 1712